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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,478	06/28/2001	Harriet G. Coverston	P6433	5934

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EXAMINER	
GODDARD, BRIAN D	

ART UNIT	PAPER NUMBER
2161	

DATE MAILED: 12/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/894,478	COVERSTON, HARRIET G.	
	Examiner	Art Unit	
	Brian Goddard	2161	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-19,24-28,30-42,47-51 and 53-65* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-19,24-28,30-42,47-51 and 53-65* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 20 July 2004 has been entered.

2. Claims 1-5, 7-19, 24-28, 30-42, 47-51 and 53-65 are pending in this application. Claims 1, 24 and 47 are independent claims. In the Amendment filed 20 July 2004 and entered upon the request for continued examination, claims 1, 24, 47, 55 and 56 were amended. This action is non-final.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-2, 5, 7-8, 13-15, 18-19, 24-25, 28, 30-31, 36-38, 41-42, 47-48, 51, 53-54, 59-61 and 64-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0031176 to Sim in view of U.S. Patent No. 5,829,023 to Bishop.

Referring to claim 1, Sim discloses a method for managing files in a file system as claimed. See Figures 1-9 & 21 and the corresponding portions of Sim's specification for this disclosure. In particular, Sim teaches a method for managing files in a file system, comprising:

receiving [2115A (See Fig. 21E)] data for a file;

breaking [2115C] the data in the file into a plurality of segments [blocks (also referred to as segments)]; {also see Fig. 9}

generating an index [See paragraphs 0217-0231 (block indices)] associated with the file indicating how the file data maps to the segments;

receiving an Input/Output request [See paragraphs 0048, 0080, 0097 & 0122-0129] with respect to a requested address [offset] in the file;

using the index [See paragraphs 0217-0231] associated with the file to determine ['search' command] the segment including data [See paragraphs 0122-0129] at the requested address in the file;

accessing ['get' command] the determined segment including the data at the requested address;

storing the segments [See Fig. 21E] in a primary storage [1530 (associated with a particular Distribution Server 1510)];

copying [distributing (See paragraphs 0115-0121)] at least one of the segments in the primary storage onto a secondary storage [at another node]; and

releasing ['clean' command] at least one of the segments copied to the secondary storage [after replication portion of distribution], wherein space used by the released segment in the primary storage is available for use [See e.g. paragraph 0109].

Sim does not explicitly teach "releasing at least one of the segments copied from the primary storage when copied to the secondary storage, wherein space used by the released segment in the primary storage is available for use and the at least one segment that was copied is not released from the secondary storage" as claimed.

Bishop discloses file system maintenance procedures similar to those of Sim, wherein file segments in a primary storage [e.g. 'local disk' or 'local hard drive'] are copied ['moved' / 'migrated'] onto a secondary storage [e.g. 'network storage' or 'archive'] and released from the primary storage when copied, and wherein space used by the released segment(s) in the primary storage is/are available for use [e.g. for more pertinent / frequently accessed files/segments] and the at least one segment that was copied is not released from the secondary storage as claimed. See the Abstract, Background of the Invention, Summary of the Invention, Figures 1-2 and the corresponding portions of Bishop's specification for this disclosure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Bishop's file cache replacement methodology to the system and method of Sim, so as to allow migration and replacement of Sim's file segments between nodes for more efficient disk maintenance. One would have been motivated to do so in order to effect more efficient disk usage in Sim's distributed system, as disclosed by both Bishop and Sim.

Referring to claim 2, Sim v. Bishop discloses the method for managing files in a file system as claimed. See Figure 9 and the corresponding portion of Sim's specification, specifically paragraphs 0089-0096, for the details of this disclosure. Sim's (as modified by Bishop) data is stored in the segments by writing the received file [900 or 950] to one segment [block], and writing further received data for the file to subsequent segments [blocks] if the last segment to which the received data was written has no more available space as claimed.

Referring to claim 5, Sim v. Bishop discloses the method for managing files in a file system as claimed. See Figures 9-10 and the corresponding portions of Sim's specification for this disclosure. In particular, Sim v. Bishop teaches the method of claim 1, as above, further comprising "providing a segment size [block size] that is at least greater than a byte size of a largest section [track] within the file; and writing each file section [track] to one segment [block]" as claimed.

Referring to claim 7, Sim v. Bishop discloses the method for managing files in a file system as claimed. See Figure 13 and the corresponding portion of Sim's specification for this disclosure. Sim v. Bishop teaches the method of claim 1, as above, "wherein as a result of releasing one or more segments [distributing the blocks], different segments for one file are capable of being stored in the primary storage and the secondary storage [on many different nodes]" as claimed.

Referring to claim 8, Sim v. Bishop discloses the method for managing files in a file system as claimed. See Paragraphs 0122-0125 of Sim's specification for this disclosure. Sim v. Bishop teaches the method of claim 1, as above, "wherein accessing

the determined segment including the requested address [See claim 1 above] further comprises "determining whether the determined segment is available in the primary storage [See paragraph 0123]; and copying the determined segment from the secondary storage to the primary storage if the determined segment is not available in the primary storage [See paragraph 0125]" as claimed.

Referring to claims 13 & 14, Sim v. Bishop discloses the method for managing files in a file system as claimed. See paragraphs 0224-0231 of Sim's specification for this disclosure. Sim v. Bishop teaches the method of claim 1, as above, further comprising "maintaining metadata for each segment [block] that is also maintained for files in the file system [See paragraph 0225]; and using the metadata for segments [blocks] and files to determine when to copy segments and files to the secondary storage and when to release segments and files in the primary storage [popularity index and usage rating]" if used space in the primary storage reaches a threshold level [capacity] as claimed.

Referring to claim 15, Sim v. Bishop discloses the method for managing files in a file system as claimed. See the abstract, summary, and selected portions of the specification mentioned above for this disclosure. Sim's (as modified by Bishop) file data in all the segments [blocks] for the file [large payload file] is capable of being larger than a storage capacity of the primary storage as claimed.

Referring to claim 18, Sim v. Bishop discloses the method for managing files in a file system as claimed. See Figures 7-11 and the corresponding portions Sim's

specification for this disclosure. Sim's (as modified by Bishop) segment [block] does not have a file name and is not represented as a file in the file system as claimed.

Referring to claim 19, Sim v. Bishop discloses the method for managing files in a file system as claimed. See Figures 7-11 and paragraphs 0224-0231 for the details of this disclosure. Sim's (as modified by Bishop) index is stored in the file [in the file metadata], wherein no user data is stored in the file [metadata] and all the user data is distributed in the segments [blocks] as claimed.

Claims 24-25, 28, 30-31, 36-38 and 41-42 are rejected on the same basis as claims 1-2, 5, 7-8, 13-15 and 18-19 respectively. See the discussions regarding claims 1-2, 5, 7-8, 13-15 and 18-19 above for the details of this disclosure.

Claims 47-48, 51, 53-54, 59-61 and 64-65 are rejected on the same basis as claims 1-2, 5, 7-8, 13-15 and 18-19 respectively. See the discussions regarding claims 1-2, 5, 7-8, 13-15 and 18-19 above for the details of this disclosure.

4. Claims 3-4, 26-27 and 49-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sim in view Bishop as applied to claim 1 above, and further in view of U.S. Patent No. 6,415,280 to Farber et al.

Referring to claim 3, Sim v. Bishop teaches the method of claim 1, as above, wherein each segment [block] has a fixed byte length [See paragraph 0227], wherein the index provides a segment order indicating an order in which file data is written to the segments [See Figs. 9-10 and paragraphs 0223-0229], and wherein the index for the file is used to determine the segment including data at the requested address in the file

by determining an offset into the file including the data at the requested address [See paragraphs 0015-0016 & 0097] as claimed.

Sim (as modified by Bishop) is silent on the details of the means by which the segment [block] number containing the requested address is determined from the offset provided. Thus, Sim does not explicitly teach "determining an integer quotient value resulting from the offset into the file divided by the fixed byte length, wherein the segment including the data at the requested address is the segment at the integer quotient value in the segment order" as claimed.

Farber discloses a system and method similar to that of Sim, wherein the segment to be read is identified "by dividing the specified file offset...by the fixed size of a segment..." See column 21, lines 16-50 for the details of this disclosure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Farber's functionality of dividing the offset by the fixed byte length to the system and method of Sim v. Bishop in order to determine the segment [block] number containing the requested address. One would have been motivated to do so because this would be an efficient, direct and logical means to obtain this information and fill Sim's silence of the implementation details.

Referring to claim 4, the system and method of Sim in view of Bishop and Farber as applied to claim 3 above discloses the invention as claimed. See paragraphs 0131-0136 of Sim's specification for this disclosure. Sim's (as modified by Bishop and Farber) fixed byte length of each segment [block] is determined by user input as claimed.

Claims 26-27 are rejected on the same basis as claims 3-4 respectively, in light of the basis for claim 24 above. See the discussions regarding claims 1, 3-4 and 24 above for the details of this disclosure.

Claims 49-50 are rejected on the same basis as claims 3-4 respectively, in light of the basis for claim 47 above. See the discussions regarding claims 1, 3-4 and 47 above for the details of this disclosure.

5. Claims 9-12, 16-17, 32-35, 39-40, 55-58 and 62-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sim in view Bishop as applied to claim 1 above, and further in view of U.S. Patent No. 6,490,666 to Cabrera et al.

Referring to claim 9, it is unclear whether Sim's (as modified by Bishop) system stores a partial version of the released segment as claimed. Sim teaches storing metadata of the released segment on the primary storage after the segment is released (See above cited portions regarding file/block metadata), but does not explicitly state that the metadata is "a partial version" of the released segment as claimed. However, the storing of metadata of the released segment is suggestion in itself for storing a partial version of the released segment.

Cabrera discloses a system and method similar to that of Sim, wherein a partial version of the released segment is stored on the primary storage. See Figures 3-5 and the corresponding portions of Cabrera's specification for this disclosure. Specifically, Cabrera teaches "storing a partial version ['stub file' – at least one data block buffered from the original file] of the released segment [file portion (or block)] including less than

all data in the segment, wherein the segment data not in the partial version is stored in the secondary storage [migrated to remote storage], wherein the partial version [stub file] remains on the primary storage [local storage] after the segment is released" as claimed. Also see e.g. column 1, lines 53-58 and the discussions of steps 604 & 704 for an overview of this disclosure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement Cabrera's storage of a stub file for a released file block into the system and method of Sim v. Bishop so as to store a stub file on the primary storage for each released file segment. One would have been motivated to do so in order to speed access of the file segments to the requesting application programs from the primary storage as taught by Cabrera in the background of the invention section, and further because of Sim's suggestion as discussed above.

Referring to claim 10, the system and method of Sim in view of Bishop and Cabrera as applied to claim 9 above discloses the invention as claimed. See Figures 9-11 & 21 and the corresponding portions of Sim's specification, as well as Figures 3-7 and the corresponding portions of Cabrera's specification for this disclosure. Sim, as modified by Bishop and Cabrera, teaches the method of claim 9, as above, "wherein the partial version of the determined segment is on the primary storage and wherein accessing the determined segment including the requested address further comprises:

accessing [Cabrera: Step 708] the partial version [stub file – buffered data block] of the determined segment on the primary storage [local storage – local DS relative to requesting application] to access that data therein;

reaching the end [Cabrera: Step 724] of the partial version when accessing data therein;

staging [Cabrera: Steps 706-712] from the secondary storage to the primary storage data from the determined segment that is not in the partial version; and

accessing [Cabrera: Step 722] the data from the determined segment staged from the secondary storage to the primary storage" as claimed.

Referring to claim 11, the system and method of Sim in view of Bishop and Cabrera as applied to claim 9 above discloses the invention as claimed. See Figures 3-5 and the corresponding portions of Cabrera's specification for this disclosure. Cabrera's implementation of stub file storage, as implemented in Sim v. Bishop, teaches that the partial version [stub file] is stored only for a first segment [first file block/portion] of the segments associated with the file [only one stub file per file, corresponding to the first file block] as claimed.

Claim 12 is rejected on the same basis as claim 10. See the discussion regarding claim 10 above for the details of this disclosure.

Referring to claim 16, Sim v. Bishop teaches the method of claim 1, as above, further comprising "reading data from one target segment on the secondary storage" as claimed. See the discussions regarding claims 1-5 above for the details of this disclosure. Sim (as modified by Bishop) does not explicitly teach the steps of determining whether a stage attribute is specified and initiating read requests to stage the number of subsequent segments as claimed.

Cabrera, as mentioned above, discloses a system and method similar to that of Sim, wherein a stage attribute is specified for staging subsequent segments as claimed. See Figures 5-6 and the corresponding portions of Cabrera's specification for this disclosure. Cabrera teaches "determining whether a stage attribute [502] is specified indicating a number of segments to stage ahead; and initiating read requests [Steps 614-616] to stage the number of subsequent segments following the target segment from the secondary storage to the primary storage" as claimed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Cabrera's staging functionality based on the stage attribute to the system and method of Sim v. Bishop, in order to determine how many file segments to stage ahead. One would have been motivated to do so in order to prevent staging more segments than necessary, making the system more efficient in memory usage and speed.

Referring to claim 17, the system and method of Sim in view of Bishop and Cabrera as applied to claim 16 above discloses the invention as claimed. See Figure 5 and the corresponding portion of Cabrera's specification for this disclosure. Cabrera's stage attribute [502], as applied in the system of Sim v. Bishop, is user specified. Thus the combination discloses receiving user input indicating the number of segments to stage ahead as claimed.

Claims 32-35 are rejected on the same basis as claims 9-12 respectively, in light of the basis for claim 29 above. See the discussions regarding claims 1, 6, 9-12 and 29 above for the details of this disclosure.

Claims 39-40 are rejected on the same basis as claims 16-17 respectively, in light of the basis for claim 29 above. See the discussions regarding claims 1, 6, 16-17 and 29 above for the details of this disclosure.

Claims 55-58 are rejected on the same basis as claims 9-12 respectively, in light of the basis for claim 52 above. See the discussions regarding claims 1, 6, 9-12 and 52 above for the details of this disclosure.

Claims 62-63 are rejected on the same basis as claims 16-17 respectively, in light of the basis for claim 52 above. See the discussions regarding claims 1, 6, 16-17 and 52 above for the details of this disclosure.

Response to Arguments

6. Applicant's arguments with respect to claims 1, 24 and 47 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The U.S. Patent references cited and not relied upon are considered particularly pertinent to applicant's claims, as amended.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Goddard whose telephone number is 571-272-4020. The examiner can normally be reached on M-F, 9 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 571-272-4023. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

bdg
10 December 2004

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